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			2856	

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/022,469

Applicant(s)

CAREY ET AL.

Examiner

David A. Rogers

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-62 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-62 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

1. The USPTO is in the process of moving to new office spaces in Alexandria, Virginia. Please note the new phone numbers for the examiner and the examiner's supervisor below.

***Response to Arguments***

2. Applicant's arguments with respect to claims 1-62 have been considered but are moot in view of the new ground(s) of rejection. In the interests of the applicant, the rejection of the claims has been rewritten to better explain the prior art references as they apply to the applicant's claims. The Office apologizes for any inconvenience that this might cause to the applicant.

***Double Patenting***

3. Applicant is advised that should claim 2 be found allowable, claim 55 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

4. Applicant is advised that should claim 13 be found allowable, claim 59 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

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5. Applicant is advised that should claim 14 be found allowable, claim 54 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

6. Applicant is advised that should claim 18 be found allowable, claim 62 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

7. Applicant is advised that should claim 29 be found allowable, claim 60 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

8. Applicant is advised that should claim 32 be found allowable, claim 56 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

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Applicant is advised that should claim 41 be found allowable, claim 61 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-18, 20-24, 26-28, 31-35, 40, 42-45, 49-59, 62, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,274,243 to Hochgraf in view of United States Patent 3,811,317 to Leonard *et al.* and United States Patent Application Publication 2002/0019187 to Carroll *et al.*

Hochgraf teaches that it is known to inspect moving webs for the detection and classification of imperfections in the surface of moving webs, such imperfections including stains and absorbing imperfections, abrasions and scattering imperfections, pinch marks, impurities preventing local processing, tears, through-holes, thickness imperfections, and other far side and near side imperfections that may print through to the surface of the webs. Hochgraf teaches a web inspection station using a “vision system” comprising a linear light source (reference item 17) for inspecting the surface of a web (reference item 10). The web

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is shown being moved longitudinally while being wrapped around rollers (reference items 12 and 14). A line of light is emitted from a slit extending lengthwise of linear light source and directed onto the surface of the web in a bright line (reference item 24). The line striking the surface of web is reflected toward a lens (reference item 26) onto a detector face (reference item 28) of a conventional linear CCD array or camera (reference item 30) which produces an electrical output signal as the CCD elements are scanned electronically in a manner known in the art. The output signal is fed by cable (reference item 34) to signal processing circuitry in box (reference item 36) and thereafter to a recording and display system. Hochgraf, however, does not teach the use of a vacuum means for aiding with the detection of holes.

Leonard *et al.* teaches that it is known to use a liquid and a vacuum to detect pinholes in moving webs. In particular, methods and devices for testing membranes for the presence of pinhole leaks are provided wherein the membrane (reference item M) is supplied from a storage roll (reference item 11) to pass in unison with a detector or indicator means (reference item D) through a combined detector fluid applicator and draw-off station, and where the detector fluid passes through any holes in the membrane and changes the state of or otherwise exposes the detector means.

A membrane testing arrangement is shown in figure 1 wherein the membrane to be tested is provided in strip form and is supported on a supply roll. A detection means is shown in the form of an indicator medium such as diazo paper for recording or mapping defects in the membrane. The diazo paper is stored on a supply roll beneath the membrane roll. The membrane and the indicator paper are

shown passing in unison along a test path that leads through a chambered test station (reference item 13) where a detector fluid, such as ammonia, is applied directly to the membrane while a vacuum is maintained beneath the indicator paper. The vacuum acts through perforations in the indicator paper provided by the perforator wheel (reference item 12P) to cause the ammonia to be drawn through any pinholes in the membrane for producing indications on the paper at locations corresponding to the locations of such pinholes.

The test station employs a compartmented distributor head having a vacuum slit through which the membrane and the detector means travel. The presence of the membrane and detector means in the slit divides the head into a detector fluid supply chamber that is bounded by the membrane and a vacuum chamber that is bounded by the detector means. The testing procedure maintains the pressure differential across the membrane approximately at the value experienced by the membrane in actual service. It would be obvious that the tested pressure would be the maximum pressure as this would ensure that the membrane was properly certified for use in the service environments. A travel speed of about 10 ft/min is employed and the membrane is advanced through the vacuum slit in light wiping contact with fluid distributor element.

As the membrane and paper move in unison, any pinholes in the membrane remain in close relationship with the indications appearing on the paper to allow immediate repair. To facilitate transport of the indicator paper and membrane through the test station, a conveyor including a drive belt (reference item 19) in the form of a continuous loop of woven nylon mesh is mounted on guide rollers (reference items 20 and 21) located fore and aft of the test head (reference item 13).

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The nylon mesh drive belt is powered by means of a motor (reference item 22) attached to the aft roller which is also provided with a pulley (reference item 21P) and drive belt (reference item 21B) connections to drive the takeup rollers (reference items 17 and 18) for the membrane and paper strip.

It is also taught by Leonard *et al.* that the ammonia is evenly distributed for uniform application across the entire width of the membrane. The ammonia is supplied through a distributor tube (reference item 27) having a uniformly spaced set of holes (reference item 27H) opening toward the membrane. The tube is located adjacent the upstream extremity of the vacuum slit that divides the test head. The distributor tube 27 is embedded within a foam rubber block 28, the foam being soft enough to accommodate contact without damage to the membrane. The foam block ensures uniform application of the ammonia to the membrane. It is also taught that other gases or liquids may be distributed to the supply chamber to cooperate with compatible indicators impregnated into the belt.

Carroll *et al.* teaches that it is known to test a barrier laminate for holes using a liquid other than ammonia after the laminate has been removed from a manufacturing machine. The barrier laminate (reference item 10) can be comprised of a liquid impermeable film (reference item 12) with at least one fibrous substrate (reference items 14 and 16) disposed on each surface of the film. Carroll *et al.* further teaches the testing of the film barrier by a liquid moisture seepage test. The liquid moisture seepage test visually demonstrates the substantial liquid impermeability of the laminate. Seepage is detected using a solution of isopropyl alcohol (a known hydrocarbon solvent), water, and red dye food color. According to the test, a sheet of a white absorbent blotting material is placed on a flat surface



and covered with a test sample of the same dimensions with the substrate side of the sample facing up. The solution is poured on top of the test sample and covered with a template. A weight is placed on top of the template for 10 minutes after which the weight, template, and test sample are removed from the white blotting paper. The paper is then inspected for ink spots to determine whether seepage occurred.

It is noted that the use of the blotting paper and or diazo paper is not necessary for all applications. See also *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965)<sup>1</sup> and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)<sup>2</sup>. In this case the moving web of Hochgraf is being inspected for holes and stains. Stains, being present from the use of dyes as taught by Carroll *et al.* would inherently show up on the second side of the web using the vacuum means as taught by Leonard *et al.* That is, one can first stain a surface of the rapidly moving web of Hochgraf using a dye and then drawing it through the surface of the web using a vacuum. After the dye has passed through any holes, the “vision system”, as taught by Hochgraf, can then be used detect the stains and determine the presence of the holes any pinholes. Having such a redundancy in Hochgraf to aid in detecting holes in webs will help insure that the moving web is free from pinholes that might negatively affect the web’s performance (see Leonard *et al.*, column 1, lines 15-22).

With regard to claims 14 and 54 , Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known that the testing procedure maintains the

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<sup>1</sup> Omission of additional framework and axle which served to increase the cargo carrying capacity of prior art mobile fluid carrying unit would have been obvious if this feature was not desired.

<sup>2</sup> Deleting a prior art switch member and thereby eliminating its function was an obvious expedient.

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pressure differential across the membrane at *approximately* the value experienced by the membrane in actual service. See MPEP 2144.04 and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)<sup>3</sup>. It would have been obvious to one of ordinary skill in the art to modify the teachings of Leonard *et al.* in view of Wolf, Jr. *et al.*, Carroll *et al.*, and Hochgraf, in particular the teaching of Leonard *et al.* where testing is done at “*approximately* at the value experienced by the membrane in actual service” so that the testing covers all of the expected maximum values and covers any unforeseen operating conditions that the membrane might be exposed to so as to avoid having to retest the membrane in order to properly certify its use in the new, unforeseen environment.

In all, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf with the teachings of Leonard *et al.* and Carroll *et al.* in order to obtain a web inspection apparatus that inspects a surface of a moving web, either manually or with a vision system, in order to determine the presence of pinholes in the moving web where the presence is detected by the presence of a stain from a dye or other colored solution comprising alcohol and/or water.

11. Claims 19 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.* and Carroll *et al.* as applied to claim 1 above, and further in view of United States Patent Application Publication 2002/0109112 to Guha *et al.*

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<sup>3</sup> Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.

Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known to inspect webs for pinholes. Hochgraf in view of Leonard *et al.* and Carroll *et al.* does not teach a method wherein an alarm is generated when a defect is detected.

Guha *et al.* teaches a web inspection system that detects flaws along the machine direction and cross direction of a web. The web inspection system utilizes a multiple of smart cameras connected to a host computer via an ethernet hub. The inspection system (reference item 800) comprises smart cameras (reference item 804) that monitors a section (reference item 806) of the web (reference item 814). Any number of smart cameras may be connected and synchronized via a control signal (reference item 808) from an encoder (reference item 816) monitoring the speed of the web. The control signal from the encoder is utilized by the smart camera to determine the position of a detected flaw or defect on the portion of the web that is monitored by the smart camera. Each smart camera is connected via standard ethernet cabling (reference item 810) to an ethernet hub (reference item 802). One of the nodes (reference item 812) on the ethernet hub is a personal computer (reference item 818) having an operator interface that provides a control and monitoring means for the web inspection system. Devices such as alarms (reference item 820) may be connected to a control line (reference item 811) to provide automatic means for notifying the operator of flaws or defects that exceed a predetermined threshold.

The use of an alarm would have been an obvious modification to the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* as the alarm would allow the user to be notified when a predetermined quantity of holes or a predetermined size of holes is detected that might be an indicator of a manufacturing defect.

Furthermore, Guha *et al.* also teaches that, in the prior art it is known to use an optical inspection system for webs where the processed image from the vision processor is sent to a host computer for display. Also connected to the host computer is a defect marker and an encoder. The encoder sends information to the host computer including the speed of the web. The web typically moves over a rotary device driven by a shaft and roller that produce pulses per unit distance. The host computer 14 utilizes this information to determine the size and position of a defect. The host computer 14 may also include a database input/output board to control the defect marking system and other peripheral device connections. The use of a marking system would have been an obvious modification over the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* as marking the web would allow a more permanent record of the locations of the defects, and would also allow the user to scrap only those sections of the web that are defect and use those sections of the web that do not have defects.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the teachings of Guha *et al.* in order to provide a method for inspecting webs in which an alarm is generated when defects are detected, and to provide a defect marking that marks the locations of the defects on the web.

12. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.* and Carroll *et al.* as applied to claim 1 above, and further in view of United States Patent 5,049,216 to Shead *et al.*

Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known to inspect webs for pinholes. Hochgraf in view of Leonard *et al.* and Carroll *et al.*

teaches, implicitly, that their respective webs, laminates, or films are all manufactured at some point in time prior to the inspection. Hochgraf in view of Leonard *et al.* and Carroll *et al.* does not expressly or implicitly teach that the machine used to inspect the webs, laminates, or films is the same machine used in the manufacturing of the same webs, laminates, or films.

It is well known to combine the functions or to broadly make separate parts integral. See MPEP 2144.04 and *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965)<sup>4</sup>. Combining the two functions of manufacturing and inspecting, in a broad manner, into a single apparatus would have been obvious to one of ordinary skill in the art in order to save the expense of having to buy, operate, and maintain two separate machines. See Shead *et al.* for example, where a multiple layered sheet (reference item 10) is manufactured in a machine that also has an inspection element (reference items 40-42).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the teachings of Shead *et al.* in order to provide a method to manufacture and inspect a web using a single apparatus.

13. Claims 29, 48, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.* and Carroll *et al.* as applied to claims 11 and 45 above, and further in view of United States Patent 6,345,453 to Ilomaki *et al.*

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<sup>4</sup> A claim to a fluid transporting vehicle was rejected as obvious over a prior art reference which differed from the prior art in claiming a brake drum integral with a clamping means, whereas the brake disc and clamp of the prior art comprise several parts rigidly secured together as a single unit. The court affirmed the rejection holding, among other reasons, "that the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice."

Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known to inspect membranes for pinholes using a liquid. Hochgraf in view of Leonard *et al.* and Carroll *et al.* does not teach a method to spray a surface of the membrane with a liquid in order to clean the membrane.

Ilomaki *et al.* teaches that it is known to clean a moving web by spraying a liquid on the surface using a cleaning apparatus (reference item 11). The apparatus of Ilomaki *et al.* comprises a forming wire (reference item 3) that travels across several rollers. In the cleaning apparatus a spraying apparatus (reference item 12) sprays water on the wire. It would be inherent that any stains on the wire would be reduced by the spraying feature. Similarly, modifying the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* to utilize a spraying device such as that taught by Ilomaki *et al.* would have been obvious in order to clean the web so that the stains from the penetrant liquid are reduced so as to allow the membrane to be used in a manufacturing process, i.e. manufacturing materials whose requirement to be free from pinholes is not needed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the teachings of Ilomaki *et al.* in order to obtain a method of cleaning a membrane using spraying means.

14. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.* and Carroll *et al.* as applied to claim 1 above, and further in view of United States Patent 6,183,599 to Oriaran *et al.*

Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known to inspect membranes for pinholes using a liquid. Hochgraf in view of Leonard *et al.*

and Carroll *et al.* does not teach a method to store and reuse a liquid drawn through the web.

Oriaran *et al.* teaches a processing apparatus for forming webs. Oriaran *et al.* teaches, in particular, that a forming fabric (reference item 12) is supported on rolls (reference items 18 and 19) that are positioned relative to a breast roll (reference item 15) for pressing the press wire to converge on the foraminous support member (reference item 11) at the cylindrical breast roll. The foraminous support member and the wire move in the same direction and at the same speed which is the same direction of rotation of the breast roll. The pressing wire and the foraminous support member converge at an upper surface of the forming roll to form a wedge-shaped space or nip into which two jets of water or foamed-liquid fiber dispersion is pressed between the pressing wire and the foraminous support member to force fluid through the wire into a saveall (reference item 22) where it is collected for reuse in the process.

It would have been beneficial and desired to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the ability to collect the sprayed liquid, as taught by Oriaran *et al.* as this would allow the device to operate in a less expensive manner, or it may be preferred if the sprayed liquid is potentially hazardous to the environment.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the teachings of Oriaran *et al.* in order to obtain a method to test membranes for pinholes with a liquid and to collect the liquid for resuse.

15. Claims 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.*, Carroll *et al.*, and Ilomaki *et al.* as applied to claims 1, 11, and 29 above, and further in view of Oriaran *et al.*

Hochgraf in view of Leonard *et al.*, Carroll *et al.*, and Ilomaki *et al.* teaches that it is known to test membranes for pinholes and to spray a membrane with a liquid in order to reduce the staining that results from the test. Furthermore, Carroll *et al.* teaches that it is known to use an alcohol and water solution in the pinhole testing. Hochgraf in view of Leonard *et al.*, Carroll *et al.*, and Ilomaki *et al.* does not teach a method to test membranes where the rinse liquid is stored for reuse.

Oriaran *et al.* teaches, in particular, that a forming fabric (reference item 12) is supported on rolls (reference items 18 and 19) that are positioned relative to a breast roll (reference item 15) for pressing the press wire to converge on the foraminous support member (reference item 11) at the cylindrical breast roll. The foraminous support member and the wire move in the same direction and at the same speed which is the same direction of rotation of the breast roll. The pressing wire and the foraminous support member converge at an upper surface of the forming roll to form a wedge-shaped space or nip into which two jets of water or foamed-liquid fiber dispersion is pressed between the pressing wire and the foraminous support member to force fluid through the wire into a saveall (reference item 22) where it is collected for reuse in the process. Modifying the teachings of Hochgraf in view of Leonard *et al.*, Carroll *et al.*, and Ilomaki *et al.* with the teachings of Oriaran *et al.* to further include a rinsing liquid comprising alcohol and/or water would have been obvious as alcohol/water solutions are already used



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in the pinhole detection, as is taught by Carroll *et al.*, and would have allowed the user to maintain a single solution source for both pinhole testing and rinsing rather than have two dissimilar solutions, and, as is well known, alcohols are quick to evaporate and would allow the membrane to dry faster.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.*, Carroll *et al.*, and Ilomaki *et al.* with the teachings of Oriaran *et al.* in order to obtain a method of rinsing a membrane using a spray of alcohol and/or water, and to save the spray for reuse.

16. Claims 41 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.* and Carroll *et al.*, as applied to claims 1 and 23 above, and further in view of United States Patent 5,196,799 to Beard *et al.*

Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known to inspect webs for pinholes using a liquid. Hochgraf in view of Leonard *et al.* and Carroll *et al.* does not teach a method wherein the liquid comprises a surfactant.

Beard *et al.* teaches that it is known to test a protective barrier for pinholes using a liquid. Beard *et al.* teaches a protective barrier material (reference item 28) having a hole or pore is placed into the bath solution (reference item 30), a portion of the electrically conducting solution passes through the hole and wets the mandrel (reference item 10'). As a result, there is an increase in surface area on the mandrel at the pore-mandrel interface, thereby decreasing the polarization impedance. Accordingly, a wetting agent is preferably used to decrease the quality factor for small holes, thereby increasing the measurement sensitivity. Beard *et al.* teaches that the suitable wetting agent to be used in the bath solution comprises a

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surfactant and/or an alcohol. Surfactant are beneficial as they are substances capable of reducing the surface tension of a liquid in which it is dissolved, thereby allowing the liquid to pass through the pores of the protective membrane in an easier manner.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the teachings of Beard *et al.* in order to utilize a liquid comprising a surfactant in order to detect pinholes in a protective membrane or film.

17. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.* and Carroll *et al.*, as applied to claim 45 above, and further in view of United States Patent 3,254,526 to Yarbrough.

Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known to inspect membranes for pinholes using a liquid and a vacuum source. Hochgraf in view of Leonard *et al.* and Carroll *et al.* does not teach that it is known to use a rotary vacuum source to produce the vacuum on the membrane.

Yarbrough teaches a method and apparatus for testing impermeable membranes. The film/membrane passes through a bath (reference item 14) containing a liquid. Simultaneously, a drum roller rotates and pulls a vacuum in order to draw the liquid through any pinholes in the membrane. The liquid in Yarbrough is taught as comprising water, hydrocarbons, alcohols, esters, ketones, or a liquid with a dissolved dye. Simultaneously, a drum roller rotates and pulls a vacuum in order to draw the liquid through any pinholes in the membrane. The use of a rotary vacuum source, such as that disclosed by Yarbrough, would have been preferred as the rotary vacuum's angular speed is equal to that of the traveling

speed of the membrane and would, therefore, cause less abrasion/rubbing damage to the membrane as it travels. Furthermore, the rotary vacuum has the added benefit of being in better contact with the membrane and would, therefore produce a better seal with the membrane. Leonard *et al.* recognizes that their system may not, in all cases, produce a desired seal with the membrane so that a means to create holes (reference item 12P) may be required.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the teachings of Yarbrough in order to obtain an apparatus for testing membranes for pinholes where the vacuum is generated by a rotary vacuum source.

18. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hochgraf in view of Leonard *et al.* and Carroll *et al.* as applied to claim 45 above, and further in view of United States Patent 5,672,407 to Beckett.

Hochgraf in view of Leonard *et al.* and Carroll *et al.* teaches that it is known to utilize an apparatus for testing for pinholes in membranes or films. Hochgraf in view of Leonard *et al.* and Carroll *et al.* does not teach the use of a scrapper to remove the liquid.

Beckett teaches an apparatus where a web (reference item 14) enters a bath (reference item 36) for processing. As the web leaves the bath at the downstream end of the tank (reference item 28) but before the web leaves the tank, the web engages a first doctor blade (reference item 50) and then a second doctor blade (reference item 52) to wipe off the liquid from the surfaces of the web, and retain such liquid in the tank. The web then passes to a washing and drying station (reference item 56). The web has wash water sprayed on by first wash water

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sprayers (reference item 58) followed by wiping of the washed surface by a first wiper blade (reference item 60), and then has wash water sprayed on again by second wash water sprayers (reference item 62) followed by wiping of the washed surface by a second wiper blade (reference item 64). Therefore, the use of scrappers/blades is well known in the art of web processing to remove moisture from the surface of the webs. The use of scrapers/blades in the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* would have been preferred as the pressure of the blades can easily contact the entire surface of the web in order to remove the liquid thereby eliminating the need for additional drying means such as sponges or heaters.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Hochgraf in view of Leonard *et al.* and Carroll *et al.* with the teachings of Beckett in order to obtain an apparatus for testing membranes, webs, laminates, or films where the membrane is cleaned of a liquid by means of a scraper/blade.


### **Conclusion**

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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30 June 2004

HELEN KWOK  
PRIMARY EXAMINER

